

## Problem Set 1-2

For Problems 1–4,

- Plot the graph on your grapher using the given domain. Sketch the result on your paper.
- Give the range of the function.
- Name the kind of function.
- Describe a pair of real-world variables that could be related by a graph of this shape.

- $f(x) = 2x + 3$  domain:  $0 \leq x \leq 10$
- $f(x) = 0.2x^3$  domain:  $0 \leq x \leq 4$
- $g(x) = \frac{12}{x}$  domain:  $0 < x \leq 10$
- $h(x) = 5 \cdot 0.6^x$  domain:  $-5 \leq x \leq 5$

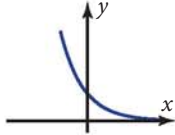
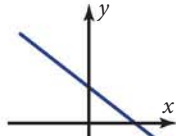
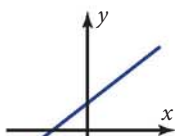
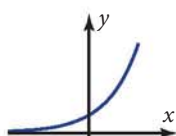
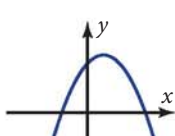
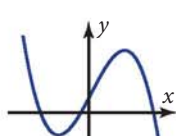

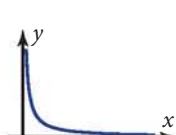

For Problems 5–18,

- Plot the graph using a window set to show the entire graph, when possible. Sketch the result.
- Give the  $y$ -intercept and any  $x$ -intercepts and the locations of any asymptotes.
- Give the range.

- Quadratic (polynomial) function  
 $f(x) = -x^2 + 4x + 12$  with the domain  $0 \leq x \leq 5$
- Quadratic (polynomial) function  
 $f(x) = x^2 - 6x + 40$  with the domain  $0 \leq x \leq 8$
- Cubic (polynomial) function  
 $f(x) = x^3 - 7x^2 + 4x + 12$  with the domain  $-1 \leq x \leq 7$
- Quartic (polynomial) function  
 $f(x) = x^4 + 3x^3 - 8x^2 - 12x + 16$  with the domain  $-3 \leq x \leq 3$
- Power function  $f(x) = 3x^{2/3}$  with the domain  $0 \leq x \leq 8$
- Power function  $f(x) = 0.3x^{1.5}$  with the domain  $0 \leq x \leq 9$
- Linear function  $f(x) = -0.7x + 4$  with the domain  $-3 \leq x \leq 10$
- Linear function  $f(x) = 3x + 6$  with the domain  $-5 \leq x \leq 5$

- Exponential function  $f(x) = 3 \cdot 1.3^x$  with the domain  $-5 \leq x \leq 5$
- Exponential function  $f(x) = 20 \cdot 0.7^x$  with the domain  $-5 \leq x \leq 5$
- Inverse-square variation function  $f(x) = \frac{25}{x^2}$  with the domain  $x > 0$
- Direct variation function  $f(x) = 5x$  with the domain  $x \geq 0$
- Rational function  $y = \frac{x-2}{(x-4)(x+1)}$  with the domain  $-3 \leq x \leq 6, x \neq 4, x \neq -1$
- Rational function  $y = \frac{x^2 - 2x - 2}{x - 3}$  with the domain  $-2 \leq x \leq 6, x \neq 3$

For Problems 19–28, name the type of function that has the graph shown.

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